

fourth and fifth pruinose from a fine pubescence, which on the lateral bases of the second and third segments tends to form triangular marks.

♂. Like the female, abdomen narrower.

*Hab.* Ruidoso Creek, New Mexico; six collected by Prof. E. O. Wooton, viz. :—(1) no. 21, at 6600 feet, July 3, on *Erysimum*; (2) no. 49, a variety with the clypeus and supraclypeal area concolorous with the rest of the face, at 7500 feet, July 6; (3) no. 24, July 3, on *Mimulus luteus*; (4) no. 142, at 6600 feet, July 10, on *Rhus*; (5) no. 171, at 6600 feet, July 10, on *Rhus*; (6) no. 170, also on *Rhus* with the last.

La Tenaja, near Santa Fé, N. M., collected by Miss Myrtle Boyle.

Santa Fé, N. M., seven, as follows:—(1) Ckll. 1141, the only male I have, unfortunately without its head, on alfalfa, Andrews orchard, June 27; (2) Ckll. 3468, on *Linum Lewisii* in garden, July 12; (3) Ckll. 1407, July 10, Boyle coll.; (4) Ckll. 4242, Aug. 5; (5) Ckll. 4055, Aug. 2, on *Clematis ligusticifolia*; (6) Ckll. 4044 and 4046, Aug. 2, on *Solidago canadensis*.

Las Cruces, N. M., March 31, 1896, on *Sisymbrium*.

This is a species of the transition-zone, though a single specimen was taken at Las Cruces, in the Upper Sonoran. Ordinarily it is known especially by the dark nervures and stigma, not at all metallic abdomen, and contrasting colour of the clypeus and supraclypeal area. The stigma may be slightly pallid, a sort of rather dilute sepia, but never honey-yellow; in one example only, apparently conspecific (Wooton's no. 49), did the character of the clypeal coloration fail.

*H. ruidosensis* is very similar to *H. Ashmeadii*, Rob., from Florida, but the latter will at once be distinguished by the narrower face and the lively reddish-brown colour of the tegulæ; the second submarginal cell in *Ashmeadii* is much narrowed above, but in *ruidosensis* it is very little narrowed.

Mesilla, New Mexico, U.S.A.,

May 9, 1897.

### XIII.—Revision of the Pierine Butterflies of the Genus *Delias*.

By A. G. BUTLER, Ph.D. &c., Senior Assistant-Keeper,  
Zoological Department, British Museum.

AS recently as 1893 Ritter von Mitis essayed a revision of this genus in the German 'Iris,' pp. 100–153; he, however, overlooked two or three described forms, and his material evidently was far from rich enough to enable him to form a

just estimate as to the value of the characters upon which species had been based.

At the present time the collection of the Natural History Museum, though still far from perfect, possesses long series of the commoner species, and is chiefly weak in those of the Solomon Islands which have been described during the last few years. The generosity of Messrs. Godman and Salvin, whose collection of these butterflies is now incorporated with the National series, has filled up several blanks and greatly improved the representation of some of the more beautiful and rarer species. Therefore, as I have been asked to bring the account of this genus up to date while fresh from its study, I will try to do my best, reducing the synonymy as much as possible.

### 1. *Delias eucharis*.

*Papilio eucharis*, Drury, Ill. Exot. Ent. ii. pl. x. figs. 5, 6 (1773).

*Pieris epicharis*, Godart, Enc. Méth. ix. p. 153 (1819).

Fifty-two examples, of which twenty-four are from the Godman and Salvin collection. Seven other examples are in the Hewitson series. India and Burma generally. B. M.

This widely distributed and common species seems to vary very little.

### 2. *Delias ethira*.

*Delias ethira*, Doherty, Journ. Asiat. Soc. Beng. iv. p. 262 (1886).

Berhampore, Ganjam and Khasia Hills (nine examples). B. M.

Although most nearly related to *D. hierte*, this species may be regarded as tending to link the latter to *D. eucharis*.

### 3. *Delias hierte*.

*Delias hierte*, Hübner, Zutr. exot. Schmett. figs. 77, 78 (1818).

Var. *Thyca indica*, Wallace, Trans. Ent. Soc. Lond. 3rd ser. vol. iv. p. 351 (1867).

Aberr. ♀. *Thyca devaca*, Moore, P. Z. S. 1872, p. 566.

Forty-three specimens, of which twenty-one are from G. & S. coll.; also five in coll. Hewitson. India, Burma, and Siam. B. M.

This species is very variable on both surfaces, but especially on the under surface of the secondaries; the scarlet submarginal spots are always large and seven in number, but they are very well developed in some examples; the yellow colouring on these wings also varies from lemon to saffron, sometimes even tinged with scarlet on the abdominal

border, whilst Moore's *T. sanaca* (a full-coloured female) has the subcostal area and cell of secondaries red; this, however, I believe to be a mere accidental discoloration, such as one sometimes sees in Pierine butterflies, and due perhaps to staining through the chance dropping of meconium from above as the insect rested below a twig; but at best a mere aberration. In some examples, especially where the yellow is deep in tint, it is confined to the inner half of the wing and partly divided from the scarlet submarginal spots by white crescents; in others these crescents are wanting; frequently the yellow covers nearly the whole of the paler portion of the wing, and (rarely) it entirely obliterates every vestige of white. In the sport to which Wallace gave the name of *Thyca indica* the black suffusion on the upper surface at apex of primaries is weakly defined and the black veins on the under surface of the secondaries are expanded by a bordering of black scales at the inner edge of the scarlet spots. None of these varieties are limited to any locality, excepting, perhaps, the variety without white on the underside of the secondaries, of which we only possess a female from Toungoo; a male from Rangoon has almost lost all trace of white, so that it is just possible that this variety may be confined to Burma.

#### 4. *Delias metarete*.

*Delias metarete*, Butler, Trans. Linn. Soc. (2) i. p. 550 (1879).

Malacca, Penang, Borneo, Sumatra. B. M. Sumatra, coll. Hewitson.

This is a Malayan representative of *D. hierte*, approaching nearest to the var. *indica*, but the much more uniformly grey apical area of the primaries above, the more restricted and sharply defined limitation of the yellow area on the under surface of the secondaries, and development of the black inner bordering of the scarlet spots constantly distinguish it. Our series consists of eight examples, two of which are from the Godman and Salvin collection, also one in the Hewitson collection.

#### 5. *Delias hæmorrhæa*.

*Pieris hæmorrhæa*, Vollenhoven, Mon. Pier. p. 10, pl. ii. fig. 5 (1865).

Three examples, Banca. ♂ ♀, B. M.

The more dusky bordering of the secondaries above, the orange instead of yellow colouring below, and restriction of the scarlet spots to three in number, readily separate this insular form from the preceding.

6. *Delias niasana*.

*Delias niasana*, Kheil, Rhop. Nias. p. 35, pl. iv. figs. 22, 23 (1884).  
 Var. *amarilla*, *ibid.* t. c.

Nias. Three examples. B. M.

Two of the specimens are from the Godman and Salvin collection. The species is a well-marked one, having the yellow on the under surface of the secondaries of a bright primrose tint, the submarginal scarlet spots almost enclosed in black and with pale edges; it approaches more nearly to *D. hyparete*, but is quite easily separated from that species by the form, pale edging, and number of the scarlet spots.

7. *Delias hyparete*.

*Papilio hyparete*, Linnæus, Mus. Lud. Ulr. p. 247 (1764).  
*Papilio autonoe*, Cramer, Pap. Exot. ii. pl. clxxxvii. C, D (1779).

Assam, Penang, Borneo, Sumatra, and Java. B. M.

Thirty-four examples, of which thirteen are from the Godman and Salvin collection. The species varies chiefly in the size of the submarginal scarlet spots on under surface of secondaries, but not to any great extent.

8. *Delias luzonensis*.

*Pieris luzonensis*, Felder, Wien. ent. Monatschr. vi. p. 285 (1862).  
 Var. *Delias palawanica*, Staudinger, Iris, ii. p. 24 (1889).  
 Vars. *Delias mindunaensis*, Mitis, Iris, vi. p. 139, pl. ii. figs. 4, 5 (1893).

Philippine Islands and Formosa. B. M.

Eighteen examples, of which twelve were received from the Godman and Salvin collection. Hewitson also had four other specimens.

In its typical form *D. luzonensis* nearly resembles the darker examples of *D. hyparete* from Java (*D. autonoe*), but is at once seen to differ in the greater obliquity of the inner edge of the blackish apical patch, owing to its being carried backwards to the end of the discoidal cell; also (on the under surface) in the broader black border of secondaries, which completely encloses the scarlet submarginal spots, and the much greater extent of yellow on these wings. The species is very variable, easily divided into five forms, as follows:—

1. Typical form, with blackish apical patch to primaries streaked above with grey between the veins; secondaries below with six scarlet spots.—Luzon, Manilla, and Formosa.

2. Secondaries below with the second and third spots

whitish and small (female figured by von Mitis, Taf. ii. fig. 5, as *D. mindanaensis* ♀).—Luzon.

3. Secondaries with fewer scarlet spots—two to three in male, three large and two very small in female (male *D. mindanaensis*, fig. 4).—Mindanao.

4. Apex of primaries above crossed by more or less confluent broad white streaks, forming a belt crossed by black veins; secondaries below with six scarlet spots.—*D. palawanica*, Palawan.

5. Secondaries below with second and third spots small and whitish.—Mindoro.

That any of these forms is constant to locality may be doubted.

### 9. *Delias lucina*.

*Delias lucina*, Distant, Ann. & Mag. Nat. Hist. ser. 5, vol. xix. p. 270 (1887).

*Delias joloana*, Staudinger, Iris, ii. p. 24 (1889).

Sulu Archipelago. Two males from G. & S. coll.

### 10. *Delias simplex*, sp. n.

♂. Upperside resembling *D. Stollii* (*autonoe*, Stoll, not Cramer), but even less varied with black: wings below white, with black veins slightly expanded on the outer border of the primaries, and so much so on the secondaries as to form a continuous narrow sinuated border; internal third of secondaries pale chrome-yellow; *no red submarginal spots*.

Expanse of wings 82 millim.

Sumatra (*Sachs*). From G. & S. coll.

### 11. *Delias Stollii*.

*Delias Stollii*, Butler, P. Z. S. 1872, p. 32.

*Papilio autonoe*, Stoll (not Cramer), Pap. Exot. pl. xxxiii. figs. 2, 2 b (1790).

China. B. M.

Six examples, of which two were in the Godman and Salvin collection; the species is easily recognizable by the secondaries on the under surface being almost wholly yellow, combined with very small scarlet submarginal spots, bordered externally by a yellow edging, which separates them from the black of the outer border.

### 12. *Delias Rosenbergii*.

*Pieris Rosenbergii*, Vollenhoven, Mon. Pier. p. 11, pl. ii. fig. 6 (1865).

*Delias chrysoleuca*, Mitis, Iris, vi. p. 138 (1893).

Macassar. Three specimens. B. M.

One example from the Godman and Salvin collection.

Var. *Delias Lorquinii*.

Var. *Delias Lorquinii*, Felder, Reise der Nov., Lep. p. 159, pl. xxiv. figs. 9, 10 (1865).

*Delias catamelas*, Staudinger, Iris, iv. p. 77 (1891).

Menado. Four examples. B. M.

Also four specimens in Hewitson's collection.

Three of the examples of this variety or local race are from the Godman and Salvin collection; it chiefly differs from typical *D. Rosenbergii* in the black suffusion towards base of secondaries on the under surface, and was figured by Vollenhoven (pl. iii. fig. 1) as the female of that species; and he mentions both as coming from Macassar. The following may be a further development of the same species, the colour of the secondaries being variable.

13. *Delias Mitesi*.

*Delias Mitesi*, Staudinger, Iris, vii. p. 352 (1894).

Sula Islands.

Differs in having the basal half of secondaries below black, without yellow basal patch; the discal area white, only tinted with yellow at inner margin; submarginal scarlet spots larger.

14. *Delias melusina*.

*Delias melusina*, Staudinger, Iris, iv. p. 76 (1891), iii. pl. iii. fig. 5.

Celebes.

Seems nearly allied to *D. zebuda*, but with very melanic upper surface and yellow subapical spots on under surface of primaries.

15. *Delias zebuda*.

*Pieris zebuda*, Hewitson, Exot. Butt. iii. *Pier.* pl. vii. figs. 49, 50 (1862).

Menado and Ternate. Six examples. B. M.

Four of the specimens from the Godman and Salvin collection. In the Hewitson collection there are four more specimens from Menado and Tondano.

16. *Delias Descombesi*.

*Pieris Descombesi*, Boisduval, Sp. Gén. Léop. i. p. 465 (1836).

Darjiling, Nepal, Assam, Silhet, Moulmein, Toungoo, Tiliu Yaw, Pongudaw, Pegu. B. M.

Twenty-eight examples, thirteen of which are from the Godman and Salvin collection. This species varies very little,

excepting in the ground-colour of the secondaries below, which, in the females, varies from buffish yellow to whitish. Five examples in the Hewitson collection.

### 17. *Delias oraia*.

*Delias oraia*, Doherty, Journ. As. Soc. Beng. lx. p. 189 (1891); Grose Smith & Kirby, Rhop. Exot. ii. p. 10, *Del.* pl. iii. figs. 5, 6 (1893).

Sumbawa Island (ex coll. G. & S.). ♂ ♀, B. M.

A well-marked local representative of *D. Descombesi*, the female being very distinct in character.

### 18. *Delias splendida*.

*Delias splendida*, Rothschild, Novit. Zool. i. p. 661 (1894); Smith & Kirby, Rhop. Exot. ii., *Del.* pl. vi. figs. 4-6 (1895).

Timor.

A very fine and distinct species of the *D. Descombesi* group.

### 19. *Delias belisama*.

*Papilio belisama*, Cramer, Pap. Exot. iii. pl. celviii. A, B (1782).

Var. *Delias nakula*, Grose Smith & Kirby, Rhop. Exot. Pier. i., *Del.* pl. i. figs. 1-4 (1889).

Var. *Delias aurantia*, Doherty, Journ. As. Soc. Beng. lx. p. 189 (1891).

*Delias belisar*, Staudinger, Iris, iv. p. 78 (1891); Grose Smith & Kirby, Rhop. Exot. ii. p. 6, *Del.* pl. ii. figs. 6, 7 (1893).

Var. *Delias vestalina*, Staudinger (= *nakula*), Iris, iv. p. 79 (1891).

Var. *Delias erubescens*, Staudinger, *t. c.* p. 80.

Java. Twenty-six specimens. B. M.

Six examples are in the Hewitson collection. Eight of the specimens in the general series are from the Godman and Salvin collection.

Attempts have been made to show that the variations of this species are localized, but it is certain that Dr. Horsfield bred the typical form, *D. nakula* and *D. aurantia*, and there is no reason for supposing that he collected his larvæ in different parts of the island. *D. belisar* has been regarded as a variety identical with *D. aurantia*; it, however, differs in the greater width of the outer border of the secondaries in the male; the female does not differ: it is said to occur at Malang, and may possibly be a localized sport of the species. *D. erubescens* is probably a rare aberration; we have a small female of a very deep rosy orange colour (formerly in the Kaden collection). Intergrades occur between typical *D. belisama* and *D. aurantia*.

20. *Delias glauce*.

♂. *Pieris glauce*, Butler, P. Z. S. 1865, p. 431, pl. xxv. fig. 2.

Borneo. Type, B. M.

This species chiefly differs from the preceding in the absence of the subapical yellow markings from the under surface of the primaries. It is said to be common in Sumatra.

21. *Delias inferna*.

*Delias inferna*, Butler, Lep. Exot. p. 63, pl. xxiv. fig. 6 (1871); Grose Smith & Kirby, Rhop. Exot., *Del.* pl. ii. figs. 3-6.

Type N.W. Australia; two males and two females, Cape York and Port Moresby. B. M.

Twelve examples, of which ten are from the Godman and Salvin collection. Hewitson also possessed a pair which he mixed up with *D. aruna*.

22. *Delias aruna*.

♂. *Pieris aruna*, Boisduval, Voy. de l'Astr., Lép. p. 48 (1832); Hewitson, Exot. Butt. ii., *Pier.* pl. iii. figs. 20-22 (1861).

♀. *Pieris bajura*, Boisduval, l. c.

Two males and one female, Humboldt Bay; male, Batchian; male, Waigiou. B. M.

From the Godman and Salvin collection; there are also two males and a female in the Hewitson collection from Batchian and Waigiou.

23. *Delias Honrathi*.

♀. *Delias Honrathi*, Mitis, Iris, vi. p. 134, pl. iii. fig. 1 (1893).

Ralum, New Pomerania.

This may turn out to be only a dimorphic form of the female of *D. madetes*, from which it principally differs in the white instead of yellow ground-colour of the upper surface and in having most of the spots on the under surface of the primaries white.

24. *Delias madetes*.

*Pieris madetes*, Godman & Salvin, P. Z. S. 1878, p. 733.

Male and female, types (coll. G. & S.); male and female, New Ireland. B. M.

25. *Delias diaphana*.

*Delias diaphana*, Semper, Verh. Hamb. iii. p. 114 (1878); Reis. Phil. v. p. 228, pl. xxxiv. figs. 3-6 (1890).

Mindanao and Davao. B. M.



Fourteen examples, of which twelve are from the Godman and Salvin collection.

The three following species stand out distinct from all the other forms of the genus, but combine characters of those which precede and those which follow them in this arrangement of the genus.

### 26. *Delias aganippe*.

*Papilio aganippe*, Donovan, Ins. New Holland, pl. xxix. (1805).

Adelaide, Sydney, Moreton Bay, &c. B. M.

Thirteen examples, of which seven are from the Godman and Salvin collection. Four other specimens in the Hewitson series.

### 27. *Delias harpalyce*.

*Papilio harpalyce*, Donovan, Ins. New Holland, pl. xviii. fig. 1 (1805).

*Papilio Lewini*, Thon, Entom. Arch. i. p. 38, pl. iii. fig. 10 (1828).

Australia, Sydney. B. M.

Nine examples, three of which are from the Godman and Salvin collection. Also three specimens in the Hewitson series.

### 28. *Delias nigrina*.

*Papilio nigrina*, Fabricius, Syst. Ent. p. 475 (1775); Donovan, Ins. New Holl. pl. xix. fig. 1 (1805).

Sydney, Moreton Bay, Richmond River. B. M.

Ten specimens, four of which are from the Godman and Salvin collection. Four other specimens in Hewitson's collection.

### 29. *Delias funerea*.

*Delias funerea*, Rothschild, Novit. Zool. i. p. 662 (1894).

*Delias Plateni*, Staudinger, Iris, vii. p. 355 (1894).

Gilolo.

In some respects this species resembles *D. timorensis*, but it is more nearly related to *D. duris*, from which it differs in the white under surface of primaries, with whitish subapical spots on a black area; the secondaries below are also quite black, with the scarlet markings more vivid than in *D. duris*.

### 30. *Delias duris*.

*Pieris duris*, Hewitson, Exot. Butt. ii., *Pier.* pl. v. fig. 34 (1861).

Ceram. Type coll. Hewitson.

Intermediate between the preceding species and *D. ceneus*.

31. *Delias cæneus*.

*Papilio cæneus*, Linnæus, Mus. Lnd. Ulr. p. 271 (1764).

*Papilio plexaris*, Donovan, Ins. New Holland, pl. xviii. fig. 2 (1805).

*Cathæmia anthyparete*, Hübner, Verz. bek. Schmett. p. 92 (1816).

*Pieris philyra*, Godart, Enc. Méth. ix. p. 150 (1819).

Amboina, Ceram. B. M.

Nineteen examples, of which nine are from the Godman and Salvin collection.

32. *Delias philotis*.

*Thyca philotis*, Wallace, Trans. Ent. Soc. ser. 3, vol. iv. p. 357, pl. viii. fig. 4 (1867).

Bourou. Types coll. Hewitson.

Hewitson united this species to *D. cæneus*, from which it may be readily distinguished by the oblique inner edge of the blackish area of primaries on the underside, leaving a large white patch from median vein to inner margin.

33. *Delias argenthona*.

*Papilio argenthona*, Fabricius, Ent. Syst. iii. 1, p. 200 (1793).

♀. *Pieris protocharis*, Boisduval, Sp. Gén. Lép. i. p. 457 (1836).

Queensland, Port Denison, Richmond River, Moreton Bay. B. M.

Fourteen examples, eight of which are from the Godman and Salvin collection. The Hewitson collection contains six specimens.

The specimen figured by me as *Delias fragalactea* (Lep. Exot. pl. xxiv. fig. 7) is only a small example of this species; the white spot at end of discoidal cell in primaries on the under surface is frequently confluent with the white of the ground-colour in this species, and therefore cannot be regarded as one of the distinguishing characters of *D. fragalactea*.

34. *Delias fragalactea*.

*Thyca fragalactea*, Butler, Ann. & Mag. Nat. Hist. ser. 4, vol. iv. p. 243 (1869), but not of Lep. Exot.

N. Australia. Two examples. Type B. M.

It is possible that this may eventually be linked to *D. argenthona*; but the greater depth of the pale basal area on the under surface of the secondaries, which encloses the red spot and extends to the end of the cell, as also the heavier black bordering of these wings on the upper surface, readily distinguish it at present from that species. Apparently the hind wings are comparatively longer than in *D. argenthona*, there

being little, if any, difference in the width of the black area preceding the scarlet spots; but this is due to the latter being less elongated than usual.

### 35. *Delias peribæa*.

*Pieris peribæa*, Godart, Enc. Méth. ix. p. 154 (1819).

*Delias Wallacei*, Rothschild, Iris, v. p. 441, pl. v. fig. 2 (1892).

Three female examples. Java, from Godman and Salvin collection.

The absence of the scarlet spot at the end of the cell, upon which Mr. Rothschild relied, proves to be an unstable character; indeed, it is not really scarlet, but orange in the female, and in one of our specimens it is indistinct.

### 36. *Delias Schönbergi*.

*Delias Schönbergi*, Rothschild, Novit. Zool. ii. p. 161, pl. viii. figs. 6, 7 (1895).

Bougainville Island, Solomon group.

This is one of the handsomest species of the *D. argenthona* group.

### 37. *Delias sambawana*.

*Delias sambawana*, Rothschild, Novit. Zool. i. p. 662 (1894); Smith & Kirby, Rhop. Exot. ii., *Del.* pl. vi. figs. 2, 3 (1895).

Sambawa Island. Three specimens, from the Godman and Salvin collection.

### 38. *Delias fasciata*.

*Delias fasciata*, Rothschild, Novit. Zool. i. p. 662 (1894); ♀, Smith & Kirby, Rhop. Exot. ii., *Del.* pl. vi. fig. 1 (1895).

Sumba.

The submarginal spots on the under surface are yellow splashed with red.

### 39. *Delias sthenobæa*.

*Pieris sthenobæa*, Boisduval, Sp. Gén. Léop. i. p. 466 (1836).

Moluccas.

Said to resemble *D. Descombesi*, but with the wings paler and no red patch at base of secondaries on the under surface; the submarginal spots are yellow.

### 40. *Delias Dohertyi*.

*Delias Dohertyi*, Rothschild, Novit. Zool. i. p. 661 (1894); Smith & Kirby, Rhop. Exot. ii., *Del.* pl. vi. figs. 7, 8 (1895).

Timor.

It is a curious thing that in the same year when the above was described M. Oberthür described a *Pieris Dohertyi* from New Guinea. The latter, however, appears to me to be allied to *P. ornytion* of Godman and Salvin, in which case it is not a *Delias* (although *P. ornytion* has erroneously been referred to this genus by von Mitis).

#### 41. *Delias bagoe*.

*Pieris bagoe*, Boisduval, Voy. de l'Astr., Lép. p. 49 (1832).

*Pieris eurygania*, Godman & Salvin, P. Z. S. 1878, p. 734.

New Ireland. Seven examples. B. M.

Five of the specimens, including the types of *P. eurygania*, are from the Godman and Salvin collection.

#### 42. *Delias Salvini*.

*Delias Salvini*, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. ix. p. 153 (1882).

New Britain. Type, B. M.

#### 43. *Delias echo*.

*Thyca echo*, Wallace, Trans. Ent. Soc. ser. 3, vol. iv. p. 358, pl. viii. fig. 3 (1867).

Bourou. Types, coll. Hewitson.

Allied to the following, but very distinct.

#### 44. *Delias isse*.

*Papilio isse*, Cramer, Pap. Exot. i. pl. lv. E, F (1779).

Amboina and Ceram. Sixteen examples. B. M.

Ten of the specimens are from the Godman and Salvin collection. The Hewitson series consists of four specimens.

#### 45. *Delias Ribbei*.

*Delias Ribbei*, Röber, Iris, i. p. 46, pl. ii. figs. 3, 4 (1886).

Aru Islands.

Also allied to *D. isse*.

#### 46. *Delias candida*.

♂. *Pieris candida*, Vollenhoven, Mon. Pier. p. 11, pl. iii. fig. 2 (1865).

♀. *Pieris herodias*, Vollenhoven, *l. c.*

Batchian, four specimens from Godman and Salvin collection.

47. *Delias chrysomelæna*.

*Pieris chrysomelæna*, Vollenhoven, Tijds. Ent. ser. 2, vol. i. p. 57, pl. i. figs. 1, 2 (1866).

Batchian, three specimens from Godman and Salvin collection.

The female above resembles that of *D. candida*.

48. *Delias echidna*.

*Pieris echidna*, Hewitson, Exot. Butt. ii., *Pier.* pl. v. figs. 35, 36 (1861).

Ceram. Type, coll. Hewitson.

49. *Delias dorylæa*.

♀. *Pieris dorylæa*, Felder, Reise der Nov., Lep. ii. p. 182 (1865);  
 ? Mitis, Iris, vi. pl. iii. fig. 2.

♂. *Thyca hippodamia*, Wallace, Trans. Ent. Soc. ser. 3, vol. iv. p. 359, pl. viii. fig. 1 (1867).

Aru. ♂, Wallace's type, coll. Hewitson.

50. *Delias dorimene*.

*Papilio dorimene*, Cramer, Pap. Exot. iv. pl. cccxxxvii. C, D (1782).

*Papilio fuliginosus*, Gmelin, Syst. Nat. i. 5, p. 2261 (1788-91).

*Pieris ageleis*, Godart, Enc. Méth. ix. p. 147 (1819).

Amboina and Ceram. Fourteen examples. B. M.

Eight of the specimens are from the Godman and Salvin collection; there are also four others in the Hewitson collection.

51. *Delias altivaga*.

*Delias altivaga*, Frühstorfer, Ent. Nachr. xix. p. 333 (1893); Stett. ent. Zeit. lv. p. 121, pl. iv. fig. 8 (1894).

Java.

Nearly allied to *D. geraldina* and *D. gabia*.

52. *Delias geraldina*.

*Delias geraldina*, Grose Smith, Novit. Zool. i. p. 535 (1894); Rhop. Exot. ii., *Del.* pl. v. figs. 1-3 (1895).

New Guinea.

53. *Delias gabia*.

♂. *Pieris gabia*, Boisduval, Voy. de l'Astr., Lép. p. 49 (1832).

New Guinea. Male, B. M.

54. *Delias Kuhni*.

*Delias Kuhni*, Honrath, Berl. ent. Zeit. p. 295, pl. vi. fig. 2 (1886).  
 Var. *Delias sulana*, Staudinger, Iris, vii. p. 354 (1894).

Male, Bangkai, Celebes, from Godman and Salvin collection.  
 Near to *D. themis*; primaries below black; secondaries with about three bright yellow submarginal spots.

55. *Delias themis*.

*Pieris themis*, Hewitson, Exot. Butt. ii., *Pier.* pl. v. figs. 31, 32 (1861).

S.E. Mindanao, Philippines. Two pairs. B. M.

Three of the specimens are from the Godman and Salvin collection.

56. *Delias singhapura*.

*Thyca singhapura*, Wallace, Trans. Ent. Soc. ser. 3, vol. iv. p. 353, pl. vii. fig. 2 (1867).

Sandakan, Labuan, Sarawak. Four males. B. M.

Two of the specimens are from the Godman and Salvin collection. In Hewitson's collection there are three males and a female (including Wallace's types).

57. *Delias agoranis*.

*Delias agoranis*, Grose Smith, Ann. & Mag. Nat. Hist. ser. 5, vol. xx. p. 266 (1887); Rhop. Exot., *Del.* pl. i. figs. 7, 8.

Mergui. Three males. B. M.

58. *Delias cathara*.

*Delias cathara*, Grose Smith, Ann. & Mag. Nat. Hist. ser. 6, vol. xii. p. 34 (1893); Rhop. Exot. ii., *Del.* pl. v. figs. 7, 8 (1895).

Kina Balu, N. Borneo.

Allied to *D. singhapura* and to the following species.

59. *Delias baracasa*.

*Delias baracasa*, Semper, Reis. Phil. ii. v. p. 230, pl. xxxiv. fig. 2 (1890).

S.E. Mindanao.

Von Mitis says that this "is most certainly nothing more than an aberration of *D. mindanaënsis*, in which the whole of the marginal spots on the under surface of the hind wings have become white." If this is correct, *D. cathara* must be a parallel form of *D. hyparete*; but, to my mind, there is no certainty in the matter. Both insects are considerably smaller than the red-spotted species, and fall naturally into the *D. singhapura* group.

60. *Delias danala*.

*Delias danala*, De Nicéville, Journ. Bom. Soc. viii. p. 51, pl. l. fig. 9 (1893).

*Delias karo*, Hagen, Iris, vii. p. 33, pl. i. fig. 4 (1894).

Sumatra.

Allied to *D. baracasa* and distantly related to *D. agostina*.

61. *Delias enniana*.

♂. *Pieris enniana*, Oberthür, Ann. Mus. Civ. Genova, xv. p. 481, pl. iv. fig. 3 (1879-80).

♀. *Thyca ennia*, part., Wallace, Trans. Ent. Soc. ser. 3, vol. iv. p. 355, pl. vii. fig. 4, ♀ (1867).

*Delias dorothea* ♀, Mitis, Iris, vi. p. 146, pl. iii. fig. 4 (1893).

Male, Waigiou, from Godman and Salvin collection.

Wallace's type of the female is in the Hewitson collection.

62. *Delias dice*.

♀. *Pieris dice*, Vollenhoven, Mon. Pier. p. 39, pl. iv. fig. 7 (1865).

New Guinea.

Allied to the preceding species.

63. *Delias nigidius*.

♀. *Delias nigidius*, Miskin, Trans. Ent. Soc. 1884, p. 93; Grose Smith & Kirby, Rhop. Exot. ii. p. 9, *Del.* pl. iii. figs. 3, 4 (1893).

♂. *Pieris jobiana*, Oberthür, Etudes d'Ent. xix. p. 7, pl. ii. fig. 6 (1894).

Port Moresby. Three males from the Godman and Salvin collection.

64. *Delias ennia*.

♂. *Thyca ennia*, Wallace, Trans. Ent. Soc. ser. 3, vol. iv. p. 355, pl. vii. fig. 4, ♂ (1867).

♀. *Delias dorothea* ♂, Mitis, Iris, vi. p. 146, pl. iii. fig. 3 (1893).

Waigiou. Type in coll. Hewitson.

65. *Delias georgiana*.

*Delias georgiana*, Grose Smith, Ann. & Mag. Nat. Hist. ser. 6, vol. xv. p. 228 (1895).

Two males and two females, New Britain. Five examples from the Godman and Salvin collection.

This must not be confounded with *D. georgina* of Felder, to which it is in no respect nearly related.

66. *Delias vishnu*.

♂. *Pieris vishnu*, Moore, Cat. Lep. E. I. Comp. i. p. 83, pl. 2 a, fig. 5 (1857).

Male, Java. Type, B. M.

Also a very large male and ordinary female, said to be from Timor, in the Hewitson collection.

67. *Delias timorensis*.

♂. *Pieris timorensis*, Boisduval, Sp. Gén. Léop. i. p. 459 (1836); Butler, P. Z. S. 1883, p. 368, pl. xxxviii. fig. 6.

Two males, Larat, Timor-laut, and Tenimber. B. M.

The Tenimber specimens are from the Godman and Salvin collection.

68. *Delias aruensis*.

*Delias aruensis*, Mitis, Iris, vi. p. 110 (1893).

*Thyca bagoe*, Wallace (not Boisd.), Trans. Ent. Soc. Lond. iii. vol. iv. p. 355, pl. vii. figs. 3, 3 a (1867).

Male and female, Aru. Types in coll. Hewitson.

69. *Delias pœcilea*.

*Pieris pœcilea*, Vollenhoven, Mon. Pier. p. 13, pl. iii. fig. 3 (1865).

Batchian. Three males, from Godman and Salvin collection.

70. *Delias sacha*.

*Delias sacha*, Grose Smith, Novit. Zool. ii. p. 75 (1895).

Obi Island.

Possibly more nearly allied to *D. candida*, but I have not seen the species.

71. *Delias euphemia*.

*Delias euphemia*, Grose Smith, Novit. Zool. i. p. 334, pl. xii. figs. 1, (1894).

Biak, N.E. New Guinea.

Allied to *D. lara* and *D. mysis*.

72. *Delias mysis*.

*Papilio mysis*, Fabricius, Syst. Ent. p. 475 (1775); Donovan, Ins. New Holl. pl. xxi. fig. 1 (1805).

Queensland, Rockingham Bay, Cape Bowen. Eight examples. B. M.

One male is from the Godman and Salvin collection. In the Hewitson collection there are two others.



73. *Delias æstiva*, sp. n.?

Possibly only a dry-season form of the preceding, but little or nothing appears to be known regarding the seasonal changes in this genus: it differs from *D. mysis* in its generally inferior size, narrower black apical border of primaries continued as a slender line to the external angle; the yellow on the under surface of the secondaries is brighter, more restricted, and more sharply defined, and the scarlet stripe is considerably narrower, more as in *D. timorensis*.

Expanse of wings, ♂ 60-70, ♀ 60 millim.

Port Darwin and Port Essington. Five examples. B. M.

One male was in the Godman and Salvin collection.

74. *Delias cruentata*.

*Pieris cruentata*, Butler, P. Z. S. 1865, p. 455, pl. xxvi. fig. 2.

Male (type), Mysol; male, Waigiou (coll. G. & S.). B. M.

75. *Delias lara*.

*Pieris lara*, Boisduval, Sp. Gén. Léop. i. p. 461 (1836).

Var. *Delias intermedia*, Mitis, Iris, vi. p. 149 (1893).

Two males and one female, Port Moresby; male, var. *intermedia*, Port Moresby. B. M.

Seven specimens, all from the Godman and Salvin collection. I am inclined to think that *D. intermedia* will prove to be the dry-season form of this species and *D. cruentata* a nearly allied species; on the other hand, the latter may prove to be the dry-season form and *D. intermedia* a form occurring at the change of the seasons. At present, however, we have no data to go upon.

76. *Delias agostina*.

*Pieris agostina*, Hewitson, Exot. Butt. i., *Pier.* pl. i. figs. 1, 2 (1852).

Darjiling, Nepal, Assam, East Pegu. Eighteen examples. B. M.

Thirteen of the specimens are from the Godman and Salvin collection. In the Hewitson collection are seven other specimens.

The following species is so remarkably variable that it has been split up into numerous named forms. In my opinion the Indian and Chinese forms represent modifications of one widely distributed species, the Indian variations ranging from almost white to almost black, the Chinese varying less

in ground-colour but with the markings more or less run together into streaks. The *D. Horsfieldii* form occurs both in India and China, as also does typical *D. belladonna*. The more or less development of yellow patches on the upper surface of the secondaries is certainly an unreliable character and not of specific value; otherwise both *D. ithiela* and *D. patrua* would have claims to separation. I shall consider this species under its varieties.

### 77. *Delias belladonna*.

*Papilio belladonna*, Fabricius, Ent. Syst. iii. 1, p. 180 (1793); Donovan, Nat. Rep. i. pl. xxxv. (1823).

Var. *Pieris Horsfieldii*, Gray, Zool. Miscell. p. 32 (1831); Herrich-Schäffer, Ausl. Schmett. figs. 13, 14 (1850).

Var. *Pieris sanaca*, Moore, Cat. Lep. E. I. Comp. i. p. 79 (1857); P. Z. S. 1857, p. 103, pl. xliv. fig. 4.

*Pieris chrysorrhæa*, Vollenhoven, Mon. Pier. p. 6, pl. ii. fig. 4 (1865).

Var. *Thyca ithiela*, Butler, Ann. & Mag. Nat. Hist. ser. 4, vol. iv. p. 242 (1869); Lep. Exot. p. 62, pl. xxiv. fig. 1 (1871).

Var. *Thyca berinda*, Moore, P. Z. S. 1872, p. 566; Waterhouse, Aid. i. pl. xii. (1881).

Var. *Delias flavalba*, Marshall, P. Z. S. 1882, p. 759.

Var. *Delias Boylei*, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xv. p. 58 (1885).

Var. *Delias Hearsayi*, Butler, l. c.

Var. *Delias patrua*, Leech, Entom. xxiii. p. 46 (1890); Butt. China, pl. xxxvii. figs. 1, 2 (1893).

Var. *Delias lativitta*, Leech, Butt. China, pl. xxxv. fig. 1 (1893).

Var. *Delias adelma*, Mitis, Iris, vi. p. 130; Leech, t. c. pl. xxxvii. figs. 5, 6 (1893).

Var. *Delias subnubila*, Leech, l. c. figs. 7, 8 (1893).

Var. *Delias zelima*, Mitis, Iris, vi. p. 131 (1893).

Var. *Delias surya*, Mitis, t. c. p. 132 (1893).

Var. *Delias amarautha*, Mitis, t. c. p. 133, pl. ii. fig. 3 (1893).

Sixty-six specimens in B. M. and coll. Hewitson as follows:—

#### Var. 1. *D. flavalba*.

Darjiling. Three in B. M. Three (not labelled) in coll. Hewitson. Two of our specimens from the Godman and Salvin collection. One of Hewitson's examples is almost wholly white above, the white spots running completely together almost to the outer border, and therefore more aberrant than in the following:—

#### Var. 2. *D. lativitta*.

Ta-chien-lu, Moupin, Bernardmyo in Burma (Leech).

Not in the Museum series at present.

Var. 3. *D. sanaca* = *chrysorrhæa*.

Six specimens, including the type, in B. M. from Darjiling and Kulu, one of which is from the Godman and Salvin collection; also two without locality in coll. Hewitson.

Var. 4. *D. Hearsayi*.

Four specimens, Kulu, Landoor; type, Barrackpore, in B. M. Two of these from the Godman and Salvin collection. The type has the basal spot orange, doubtless from discoloration.

Var. 5. *D. Boylei* = *amarantha*.

Four specimens: male (type), Darjiling; two males and one female, Sikhim.

The type of this species differs a little from the others, the whitish spots being less defined and streaky, the basal spot red instead of yellow, the anal patch dull saffron-yellow; the figure by von Mitis is very like it, but is from a slightly less discoloured example.

Var. 6. *D. subnubila*.

Moupin, Huang-mu-chang, and Pu-tsu-fong, Western China (*Leech*).

Var. 7. *D. belladonna* (typical).

Male, N.W. Himalayas; female, "Ind. orient." One pair only. B. M.

The female is an old and somewhat discoloured specimen, the yellow patches having become faded and reddish; it, however, agrees well in pattern with Donovan's figure. I believe the female figured by *Leech* (pl. xxxvii. fig. 4) should be referred to this variety, but the male (fig. 3) to *D. Horsfieldii*. However, it is of no great consequence, as all these forms grade into one another in a hopelessly inconsiderate manner.

Var. 8. *D. Horsfieldii*, = *surya* and *zelima*.

Thirteen examples varying in size, elongation of wing, and size of discal spots in secondaries; also five intergrades between this variety and the next. Kali valley, N.W. India; Kulu, Darjiling, Bhutan, Nepal, and Burma.

Of the eighteen examples, twelve were received from Messrs. Godman and Salvin, including all the connecting links between typical *D. Horsfieldii* and *D. ithiela*.

Var. 9. *D. ithiela* ♂, = *D. berinda* ♀.

Nineteen specimens from Darjiling (including the type), from the Khasia and Naga Hills and Assam; thirteen of these were received from Messrs. Godman and Salvin. Also one example in the Hewitson collection.

*D. berinda* agrees with our solitary female.

Var. 10. *D. adelma*.

Chang-Yang, Central China (*Leech*).

This form is even blacker than *D. ithiela*, the white discal spots being replaced by grey streaks; the yellow at anal angle and on abdominal area of secondaries has, however, reappeared.

Var. 11. *D. patrua*.

Chang-Yang, Central China (*Leech*).

Only differs from the preceding variety in the reduction of the yellow patch at base of secondaries above and of all the yellow markings below. It was most inconsistent on the part of my excellent friend Mr. Leech to regard it as a distinct species, and one of these days he will doubtless admit as much. It may be supposed that my present action is also inconsistent with that formerly taken by me; but this is not so. I have always followed the plan of regarding differently marked types, especially if they did not agree in form and had been received from different localities, as distinct species; but whenever I have obtained series of intergrades which proved their identity, I have at once admitted the impossibility of keeping them separate. A very small difference in pattern may be of specific value, but a mere variation in the size of spots between two specimens taken in the same locality is most unlikely to be of importance.

78. *Delias aglaia*.

*Papilio aglaia*, Linnæus, Syst. Nat. ed. x. p. 465 (1758).

*Papilio pasithoe*, Linnæus, Syst. Nat. ed. xii. p. 755 (1767); Donovan, Ins. China, pl. xxx. fig. 2 (1799).

*Papilio dione*, Drury, Ill. Exot. Ent. ii. pl. viii. figs. 3, 4 (1773).

*Papilio porsenna*, Cramer, Pap. Exot. i. pl. xliii. D, E (1776).

Darjiling, Assam, Silhet, Nepal, Tenasserim, Burma, China. Thirty-four examples. B. M.

Fifteen of the specimens were received from Messrs. Godman and Salvin; there are also four others in the Hewitson collection. This species varies a good deal as regards the amount of creamy yellow on the upper surface of the

secondaries; in some examples from Burma it almost fills the area included between the first and second median branches, leaving only four diffused spots between it and the costa; in others it is limited by the first median branch, leaving five diffused spots; but all kinds of links between the two types also occur.

### 79. *Delias parthenope*.

*Thyca parthenope*, Wallace, Trans. Ent. Soc. ser. 3, vol. iv. p. 347 (1867).

*Thyca ninus*, Wallace, l. c. pl. vii. fig. 1.

Elephant Island, Malacca, Borneo. B. M. Sumatra (G. & S. coll.).

The type from Malacca is in the Hewitson collection mixed with the preceding species.

### 80. *Delias pandecta*.

*Delias pandecta*, Staudinger, Iris, 1889, p. 23.

Two males and one female, Palawan. Four examples (Godman and Salvin coll.).

We have a female from Nias which resembles this species in colouring, but differs above in having the greyish-white macular belt on the upper surface of the primaries across the end of the cell, so that it touches the white spot. This may possibly be nearer to *D. aglaia*, but without the male it is impossible to decide.

### 81. *Delias pandemia*.

*Thyca pandemia*, Wallace, Trans. Ent. Soc. ser. 3, vol. iv. p. 346, pl. vi. figs. 4, 4 a (1869).

Palawan, Labuan, and Sarawak. B. M.

Fourteen examples, of which twelve are from the Godman and Salvin collection. Wallace's type is in the Hewitson collection.

### 82. *Delias henningia*.

*Pontia henningia*, Eschscholtz, Kotzeb. Reise, iii. p. 214, pl. ix. figs. 20 a, b (1821).

Var. *Thyca lucerna*, Butler, Ann. & Mag. Nat. Hist. ser. 4, vol. iv. p. 243 (1869); Lep. Exot. p. 62, pl. xxiv. figs. 2, 5 (1871).

Var. *Thyca ochreopicta*, Butler, Ann. & Mag. Nat. Hist. ser. 4, vol. iv. p. 244 (1869); Lep. Exot. p. 63, pl. xxiv. figs. 3 (♀), 4 (♂) (1871)\*.

Twenty-six examples, of which fifteen are from the Godman and Salvin collection. They separate into the following forms:—

\* I transposed the sexes of the two variations of this species.

1. *D. ochreopicta*.

Six examples. Luzon and Mindanao. (Three, G. & S. coll.)

2. *D. ochreopicta*, var.

Eight examples. Mindoro, Guimaras, Luzon. (Seven, G. & S. coll.)

In some respects much nearer to *D. lucerna* and *henningia*.

3. *D. henningia*.

Nine examples. "China," Mindoro, Manilla, Luzon. (Three, G. & S. coll.)

Barely distinct from the following.

4. *D. lucerna*.

Three examples. Philippines; no special locality noted. (Two, G. & S. coll.)

Chiefly differs from the preceding variety in the greater expanse of deep yellow on the secondaries.

Of the above forms *D. ochreopicta* is the best marked, inasmuch as it nearly approaches *D. pandemia* in both sexes, chiefly differing from it in the broad grey-and-white belt across the primaries. Hewitson's collection contains a male of var. 1, a pair of var. 3, and a female of var. 4.

83. *Delias ottonia*.

*Delias ottonia*, Semper, Reis. Phil. ii. v. p. 235, pl. xxxiv. figs. 7-9 (1890).

Davao and Mindanao (♂ ♀, coll. G. & S.; ♂, B. M.).

84. *Delias egialea*.

*Papilio egialea*, Cramer, Pap. Exot. ii. pl. clxxxix. D, E (1779).

*Delias tyche* and *apriata*, Hübner, Verz. bek. Schmett. p. 91 (1816).

Eight examples. Java (two from G. & S. coll.). B. M.  
Two females in the Hewitson collection.

85. *Delias crithoe*.

*Pieris crithoe*, Boisduval, Guérin & Percheron, Gen. Ins. (1835);  
Vollenhoven, Mon. Pier. p. 7 (1865).

Java. One female, G. & S. coll.; three males, B. M.  
A pair also in the Hewitson collection.

86. *Delias bromo*.

♂. *Delias bromo*, Frühstorfer, Ent. Nachr. xix. p. 335 (1893).

♀. *Delias dymas*, De Nicéville, Journ. A. S. Beng. lxiii. pl. v. fig. 7 p. 44 (1894).

Java. ♂, B. M.

87. *Delias tobahana*.

♀. *Delias tobahana*, Rogenhofer, Verh. zool.-bot. Ges. Wien, xlii. p. 571 (1892).

♂. *Delias darceto*, De Nicéville, Journ. Bomb. Soc. viii. p. 51, pl. 1. fig. 4 (1893).

Sumatra.

Not in the Museum series.

88. *Delias parthenia*.

*Delias parthenia*, Staudinger, Iris, v. p. 449 (1892).

Male, Kina Balu. B. M.

89. *Delias ninus*.

*Thyca ninus*, Wallace, Trans. Ent. Soc. Lond. ser. 3. vol. iv. p. 347 (1867).

*Thyca parthenope*, Wallace, *l. c.* pl. vi. figs. 5, 5 a (1867).

Penang. Two males. B. M.

The type (from Malacca) is in the Hewitson collection.

90. *Delias pyramus*.

*Thyca pyramus*, Wallace, Trans. Ent. Soc. ser. 3, vol. iv. p. 347 (1867).

*Pieris thisbe*, Gray, Lep. Ins. Nep. pl. vii. fig. 1 (1846).

Var. *Delias scandha*, Doherty, Journ. Asiat. Soc. Beng. vol. lv. 2, p. 262 (1886).

Darjiling, Nepal, Bhutan, East Pegu. Fourteen examples.

B. M.

Nine of the specimens are from the Godman and Salvin collection. The Hewitson collection contains five others.

91. *Delias thisbe*.

♀. *Papilio thisbe*, Cramer, Pap. Exot. iii. pl. ccxxxiii. C (1782).

*Pieris acalis*, Godart, Enc. Méth. ix. p. 148 (1819).

China.

This species appears chiefly to differ from the female of *D. pyramus* in the grey colouring and heavy black border of the secondaries. I have never seen the species, and Mr. Leech's work on the butterflies of China does not include any of the species of *Delias* excepting *D. belladonna* and its varieties.

92. *Delias blanca.*

*Pieris blanca*, Felder, Wien. ent. Mon. vi. p. 284 (1862); Reise der Nov., Lep. ii. p. 160, pl. xxiv. figs. 6, 7 (1865).

Luzon.

93. *Delias orphne.*

*Thyca orphne*, Wallace, Trans. Ent. Soc. ser. 3, vol. iv. p. 361, pl. viii. fig. 2 (1867).

Malacca. Two examples, including the type in coll. Hewitson.

94. *Delias georgina.*

*Pieris georgina*, Felder, Wien. ent. Mon. v. p. 298 (1861); Reise der Nov., Lep. ii. p. 160, pl. xxiv. figs. 4, 5 (1865).

Luzon.

95. *Delias cinerascens.*

*Delias cinerascens*, Mitis, Iris, vi. p. 126, pl. ii. fig. 2, ♀ (1893).

Kina Balu.

96. *Delias simanabum.*

*Delias simanabum*, Hagen, Iris, vii. p. 34, pl. i. fig. 3 (1894).

Sumatra.

97. *Delias momea.*

*Pieris momea*, Boisduval, Sp. Gén. Lép. i. p. 477 (1836).

*Delias Hageni*, Rogenhofer, Verh. zool.-bot. Ges. Wien, xlii. p. 572 (1892).

*Delias datames*, De Nicéville, Journ. Bomb. Soc. viii. p. 53, pl. l. fig. 8 (1893).

Java. ♂, B. M.

A female example is in the Hewitson collection. Occurs also in Sumatra; but I fail to understand why de Nicéville considers *D. simanabum* to be the same species. It appears to me to be widely distinct, not even belonging to the same group of species.

98. *Delias nysa.*

*Papilio nysa*, Fabricius, Syst. Ent. p. 473 (1775).

♀. *Papilio endora*, Donovan, Ins. New Holl. pl. xx. fig. 2 (1805).

Moreton Bay, Sydney, Queensland. Twelve examples. B. M.

Five specimens are from the Godman and Salvin collection. The Hewitson collection also contains five specimens.

The following species may or may not belong to this genus: I have never seen a specimen:—



99. *Delias? d'Albertisi*.

♂. *Pieris d'Albertisi*, Oberthür, Ann. Mus. Civ. Genova, xv. p. 480, pl. iv. fig. 4 (1879-80).

♀. *Delias discus*, Honrath, Berl. ent. Zeit. xxx. p. 130, pl. iv. fig. 4 (1882).

New Guinea.

A curiously coloured species, vaguely resembling *Tenaris* and *Dyctis*.

Since the completion of this Revision Mr. Grose Smith has described three additional species in the Ann. & Mag. Nat. Hist. for April, 1897, p. 403.

XIV.—Notes from the Gatty Marine Laboratory, St. Andrews.  
—No. XVIII. By Prof. M'INTOSH, M.D., LL.D.,  
F.R.S.

[Plate III.]

1. On the Phosphorescence of *Gattyana (Nychia) cirrosa*, Pallas.
2. On a new *Evarne (E. atlantica)* from Rockall.
3. On the British Species of *Pholoë*.
4. On a Collection of Annelids made by Canon Norman in Norway.  
—Part I. New *Evarne* and Two Species of *Sthenelais*.

1. *On the Phosphorescence of Gattyana (Nychia) cirrosa,*  
*Pallas.*

The alteration of the generic name of this not uncommon species, as Dr. Merle Norman has shown in a carefully prepared manuscript on the subject, which I have had the privilege of perusing, is necessary, since the name *Nychia*, given to it by Malmgren in 1865, had already been used by Stål for one of the Hemiptera.

*G. cirrosa* has long been known as a commensalistic Polynoid in the tubes of *Chaetopterus*. Hitherto, however, the specimens of this annelid on the East Coast have chiefly been procured after storms or from deep water. Lately they have been frequently found as commensalistic forms in the tubes of *Amphitrite debilis*, Dalyell (*Johnstoni*, Mgrn.), and of comparatively large size. The fact that such species as *Polynoë scolopendrina*, habitually found in the tubes of *Terebellæ*, are phosphorescent suggested experiment in the present instance, with the result that *G. cirrosa* was also found to possess this property. Irritation in the dark causes the scales to gleam